South Sutter Water District

ATTACHMENTS TO

2003 WATER MANAGEMENT PLAN

Pursuant to Water Code Section 10608.48

Prepared by

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SOUTH SUTTER WATER DISTRICT

Water Management Plan

ATTACHMENT 1

2012 Agricultural Water Management Plan Checklist

2012 Agricultural Water Management Plan Checklist[1]			
AWMP* Location	**Guidebook Location**	**Description**	**SB X7-7 Section (or other, as identified)**
Yes	1.4	AWMP Required?	10820, 10608.12
X	1.4	At least 25,000 irrigated acres or	10853
-	1.4	Less than 25,000 acres and funding provided	10853
	1.4	Initial AWMP prepared and adopted by December 31, 2012?	10820 (a)
-	1.4	December 31, 2015 update?	10820 (a)
-	1.4	5-year cycle update?	10820 (a)
-	1.4	New agricultural water supplier after December 31, 2012 - AWMP prepared and adopted within 1 year?	10820 (b)
Yes	1.5, 4.2	AWC 1999 MOU: Report on EWMP implemented or scheduled for implementation included?	10827
-	1.5, 5	USBR water management/conservation plan:	10828(a)
-	1.5, 5.1	Adopted and submitted to the United States Bureau of Reclamation within the previous four years? AND	10828(a)(1)
-	1.5, 5.1	The United States Bureau of Reclamation has accepted the water management/conservation plan as adequate?	10828(a)(2)
-	1.4	UWMP or participation in areawide, regional, watershed, or basinwide water management planning: does the plan meet requirements of SB X7-7 2.8? (use checklist)	10829
2012 Progress Report	3.1 A	Description of previous water management activities	10826(d)
Yes	3.1 B.1	Was each city or county within which supplier provides water supplies notified that the agricultural water supplier will be preparing or amending a plan?	10821(a)
Yes	3.2 B.2	Was the proposed plan available for public inspection prior to plan adoption?	10841
Yes	3.1 B.2	Publically-owned supplier: Prior to the hearing, was the notice of the time and place of hearing published within the jurisdiction of the publicly owned agricultural water supplier in accordance with Government Code 6066?	10841
Yes	3.1 B.2	14 days notification for public hearing?	GC 6066
Yes	3.1 B.2	Two publications in newspaper within those 14	GC 6066

[1] DWR, A Guidebook to Assist Agricultural Water Suppliers to Prepare a 2012 Agricultural Water Management Plan, October 24, 2012.

2012 Agricultural Water Management Plan Checklist[1]			
AWMP* Location	**Guidebook Location**	**Description**	**SB X7-7 Section (or other, as identified)**
		days?	
Yes	3.1 B.2	At least 5 days between publications? (not including publication date)	GC 6066
-	3.1 B.2	Privately-owned supplier: was equivalent notice within its service area and reasonably equivalent opportunity that would otherwise be afforded through a public hearing process provided?	10841
-	3.1 C.1	After hearing/equivalent notice, was the plan adopted as prepared or as modified during or after the hearing?	10841
Yes	3.1 C.2	Was a copy of the AWMP, amendments, or changes, submitted to the entities below, no later than 30 days after the adoption?	10843(a)
X	3.1 C.2	The department.	10843(b)(1)
X	3.1 C.2	Any city, county, or city and county within which the agricultural water supplier provides water supplies.	10843(b)(2)
X	3.1 C.2	Any groundwater management entity within which jurisdiction the agricultural water supplier extracts or provides water supplies.	10843(b)(3)
X	3.1 C.2	Any local agency formation commission serving a county within which the agricultural water supplier provides water supplies.	10843(b)(7)
	3.1 C.3	Adopted AWMP availability	10844
-	3.1 C.3	Was the AWMP available for public review on the agricultural water supplier's Internet Web site within 30 days of adoption?	10844(a)
Yes	3.1 C.3	If no Internet Web site, was an electronic copy of the AWMP submitted to DWR within 30 days of adoption?	10844(b)
	3.1 D.1	Implement the AWMP in accordance with the schedule set forth in its plan, as determined by the governing body of the agricultural water supplier.	10842
X	3.2	Description of the agricultural water supplier and service area including:	10826(a)
2	3.2 A.1	Size of the service area.	10826(a)(1)
3	3.2 A.2	Location of the service area and its water management facilities.	10826(a)(2)
4	3.2 A.3	Terrain and soils.	10826(a)(3)

2012 Agricultural Water Management Plan Checklist[1]			
AWMP* Location	**Guidebook Location**	**Description**	**SB X7-7 Section (or other, as identified)**
5	3.2 A.4	Climate.	10826(a)(4)
6	3.2 B.1	Operating rules and regulations.	10826(a)(5)
7	3.2 B.2	Water delivery measurements or calculations.	10826(a)(6)
8	3.2 B.3	Water rate schedules and billing.	10826(a)(7)
8	3.2 B.4	Water shortage allocation policies.	10826(a)(8)
12	3.3	Water uses within the service area, including all of the following:	10826(b)(5)
13	3.3 A	Agricultural.	10826(b)(5)(A)
13	3.3 B	Environmental.	10826(b)(5)(B)
13	3.3 C	Recreational.	10826(b)(5)(C)
14	3.3 D	Municipal and industrial.	10826(b)(5)(D)
14	3.3 E	Groundwater recharge.	10826(b)(5)(E)
14	3.3 F	Transfers and exchanges.	10826(b)(5)(F)
15	3.3 G	Other water uses.	10826(b)(5)(G)
	3.4 A	Description of the quantity of agricultural water supplier's supplies as:	10826(b)
8-10, Table 2	3.4 A.1	Surface water supply.	10826(b)(1)
10	3.4 A.2	Groundwater supply.	10826(b)(2)
11	3.4 A.3	Other water supplies.	10826(b)(3)
15	3.4 A.4	Drainage from the water supplier's service area.	10826(b)(6)
	3.4 B	Description of the quality of agricultural waters suppliers supplies as:	10826(b)
11-12	3.4 B.1	Surface water supply.	10826(b)(1)
-	3.4 B.2	Groundwater supply.	10826(b)(2)
-	3.4 B.3	Other water supplies.	10826(b)(3)
11-12	3.4 C	Source water quality monitoring practices.	10826(b)(4)
15	3.4 B.4	Drainage from the water supplier's service area.	10826(b)(6)
	3.5	Description of water accounting, including all of the following:	10826(b)(7)
15-16	3.5 A	Quantifying the water supplier's water supplies.	10826(b)(7)(A)
16, Table 6	3.5 B	Tabulating water uses.	10826(b)(7)(B)
16, Table 8	3.5 C	Overall water budget.	10826(b)(7)(C)
16	3.5 D	Description of water supply reliability.	10826(b)(8)
-	3.6	Analysis of climate change effect on future water supplies analysis	10826(c)
	3.7	Water use efficiency information required pursuant to Section 10608.48.	10826(e)

2012 Agricultural Water Management Plan Checklist[1]			
AWMP* Location	**Guidebook Location**	**Description**	**SB X7-7 Section (or other, as identified)**
	3.7 A	Implement efficient water management practices (EWMPs)	10608.48(a)
Attachment 2	3.7 A.1	Implement Critical EWMP: Measure the volume of water delivered to customers with sufficient accuracy to comply with subdivision (a) of Section 531.10 and to implement paragraph (2).	10608.48(b)
Attachment 2	3.7 A.1	Implement Critical EWMP: Adopt a pricing structure for water customers based at least in part on quantity delivered.	10608.48(b)
Attachment 3	3.7 A.2	Implement additional locally cost-effective and technically feasible EWMPs	10608.48(c)
Attachment 3	3.7 B	If applicable, document (in the report) the determination that EWMPs are not locally cost-effective or technically feasible	10608.48(d)
Attachment 3	3.7 A	Include a report on which EWMPs have been implemented and planned to be implemented	10608.48(d)
-	3.7 A	Include (in the report) an estimate of the water use efficiency improvements that have occurred since the last report, and an estimate of the water use efficiency improvements estimated to occur five and 10 years in the future.	10608.48(d)
-	5	USBR water management/conservation plan may meet requirements for EWMPs	10608.48(f)
-	6 A	Lack of legal access certification (if water measuring not at farm gate or delivery point)	CCR §597.3(b)(2)(A)
-	6 A, 6 B	Delivery apportioning methodology (if water measuring not at farm gate or delivery point)	CCR §597.3.b(2)(C),
Attachment 2	6 C	Description of water measurement BPP	CCR §597.4(e)(2)
Attachment 2	6 D	Conversion to measurement to volume	CCR §597.4(e)(3)
Attachment 2	6 E	Existing water measurement device corrective action plan? (if applicable, including schedule, budget and finance plan)	CCR §597.4(e)(4))

SOUTH SUTTER WATER DISTRICT

Water Management Plan

ATTACHMENT 2

Report on Critical Efficient Water Management Practices

Attachment 2: Critical Efficient Water Management Practices

Water Code Section 10608.48(b) requires agriculture water suppliers to measure the volume of water delivered to customers with sufficient accuracy to comply with subdivision (a) Section 531.10 and to adopt a pricing structure for water customers based at least in part on quantity delivered. South Sutter Water District (SSWD) believes that it is in compliance with the provisions of Section 10608.48(b). California Code of Regulation (CCR) §597 was approved on July 11, 2012, which defines how agriculture suppliers comply with Water Code Section 10601.48(a). SSWD intends to comply with the measurement certification requirements of CCR §597 as described below. Water delivery measurements were explained in SSWD's November 2003 Agricultural Water Management Council (AWMC) Water Management Plan (2003 Plan), described further below.

Critical EWMP #1 - Measurement

SSWD measures and records deliveries to each customer using standardized flow measurement devices. SSWD believes the current flow measurement devices can be verified to the required accuracy level of ±12% by volume. Deliveries within the SSWD service area are made either by gravity or pump; all are measured by McCrometer propeller meters. McCrometer propeller meters are laboratory certified to be accurate to within ±2% of the reading. Although SSWD uses propeller meters to measure deliveries at all turnout locations, the volumes delivered are determined in two ways depending upon conditions at the turnout.

A portion of turnouts in SSWD are measured by continuously installed propeller meters. These devices measure velocities and are factory calibrated for the size of the pipe to provide flow rate and volumes.

There are some areas of SSWD that are subject to debris. Debris can interfere and clog propeller meters. Not only can this damage the meter, but it can also cause problems in water delivery. In these locations, SSWD uses the propeller meters to set the gate at the necessary flow rate; they are checked daily to obtain an instantaneous flow rate and to ensure consistency in deliveries. The instantaneous flow rate is used to calculate the volume delivered at the turnout each day.

Table 1 below identifies the number of propeller meters, along with an estimated level of accuracy. The number of devices that are installed continuously, versus daily, depends on conditions within SSWD, which vary by season; therefore, the number of devices identified in Table 2.1 represents the total number of turnouts within SSWD.

Table 2.1 Water Delivery Measurements

Measurement Device	Number of Devices	Frequency of Measurement	Frequency of Maintenance	Estimated Level of Accuracy (%)[2]
Propeller Meter (Flow rate and Volumetric)	382	Continuous / Daily	At measurement & annually	within ±10%

[2] See 2003 Plan, Page 7

SSWD intends to certify its existing measurement devices in accordance with CCR §597.4(a)(1)(A), using field-testing and analysis completed on a random and statistically-representative sample of existing measurement devices. The field-testing and analysis protocols will be performed according to the manufacturer's recommendations, design specifications, or industry recognized standards. All field testing will be conducted by individuals trained in the use of the field testing equipment and will be documented in a report approved by an engineer. In addition to the field testing, operation and maintenance protocols will be reviewed to assure they meet best professional practices. A summary of the operation and maintenance protocols, together with any suggested changes, will be included in the report approved by the engineer.

Two certification methods will be used: one method for the propeller meters installed continuously, and a second method for meters installed to collect daily readings. Devices that remain in place throughout the delivery season, and continuously record volumes with an integrated totalizer, provide a volumetric measurement. A Sontek Flow Tracker or similar device will be used to verify the flow rates indicated by the propeller meters. In addition, the volumes delivered will be verified by monitoring the flow rate over a specified period of time, and the resulting calculated volume will be compared with the volume recorded by the totalizer.

As identified previously, due to debris that interferes with the operation of propeller meters in some locations, the meters are placed in the turnout daily to measure an instantaneous flow rate. This flow rate is averaged over the period between measurements to calculate the volume delivered. Since these devices are used to measure flow rate and require conversion into volume, all the measurement and conversion errors must be combined with the device errors to determine the volumetric error of each device. As with the permanent devices, a Sontek Flow Tracker, or similar device, will be used to verify the flow rates indicated by the propeller meters. In addition, water levels will be recorded within the canals to monitor variations in water level throughout the day and the irrigation season. This information will be used in the determination of the accuracy of the volumes delivered at these locations. The certification process will evaluate all applicable errors and mathematically combine them to determine if each flow measurement device complies with CCR §597.3(a)(1).

In addition to verifying that the existing measurement devices meet the accuracy standards required under CCR §597, certification process will include review of installation and operation and maintenance protocols to confirm the existing devices are installed and maintained to industry-approved standards or manufactures specifications. Field data collection, quality control and assurance procedures will be reviewed and documented in the report approved by an engineer. The initial estimate of the cost to develop and implement the certification program described above, and to prepare the report required pursuant to CCR §597, is $60,000. SSWD

intends to conduct the certification program over a two-year period. Table 2.2 below provides the expected schedule for implementation.

Table 2.2 Schedule of Flow Measurement Implementation.		
Task	2012	2013
Develop Plan	X	
Field Testing	X	X
Data Analysis and Report		X

Finance Plan

SSWD intends to finance the certification program with money from its general fund.

Corrective Action Plan

As identified above, SSWD believes its existing measurement devices meet the accuracy requirements of CCR §597. A plan for corrective action will be developed following completion of the certification program if existing measurement devices are not in compliance.

Critical EWMP #2 – Pricing in Part by Volume Measured

SSWD bills its customers based on the quantity of water delivered as described in its 2003 Plan[3]. Attached to the 2012 Progress Report are copies of the 2012 sample notice of water allocation and applicable rates distributed to customers in the SSWD availability area and a sample bill.

[3] See 2003 Plan, Page 8

SOUTH SUTTER WATER DISTRICT

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ATTACHMENT 3

Report on Conditional Efficient Water Management Practices

Attachment 3: Conditional Efficient Water Management Practices

SSWD evaluated many of the Conditional EWMPs as part of the 2003 Plan. The 2012 Progress Report to the 2003 Plan provides an update of the EWMPs implemented since 2003 and the EWMPs currently being considered for implementation. SSWD may further address conditional EWMPs at a future date. Table 3.1 summarizes the Conditional EWMPs identified in Water Code Section 10608.48(c) and the 1999 AWMC MOU and summarizes where they are addressed in SSWD's WMP.

Table 3.1 Report of EWMPs Implemented/Planned

EWMP	1999 AWMC MOU EWMPs	Description of EWMPs Implemented	Description of EWMPs Planned
Conditional			
1 – Alternate Land Use	B-1	Technically infeasible per 2003 Plan (Page 19)	
2 – Recycled Water Use	B-2	Refer to 2003 Plan (Page 19)	Refer to 2012 Progress Report
3 – On-Farm Irrigation Capital Improvements	B-3	Continuing implementation per 2003 Plan (Page 19)	
4 – Incentive Pricing Structure	C-2	Refer to 2003 Plan (Page 21)	
5 – Infrastructure Improvements	B-5	Refer to 2003 Plan (Page 20)	Refer to 2012 Progress Report
6 – Order/Delivery Flexibility	B-6	Implemented per 2003 Plan (Page 20)	
7 – Supplier Spill and Tailwater Systems	B-7	Planned implementation per 2003 Plan (Page 20)	Refer to 2012 Progress Report
8 – Conjunctive Use	B-8	Implemented per 2003 Plan (Page 20), refer to 2012 Progress Report	

Table 3.1 continued

EWMP	1999 AWMC MOU EWMPs	Description of EWMPs Implemented	Description of EWMPs Planned
9 – Automated Canal Controls	B-9	Planned implementation per 2003 Plan (Page 20), refer to 2012 Progress Report	
10 – Customer Pump Test/Eval.	No equivalent	See this Attachment below	
11 – Water Conservation Coordinator	A-2	Implemented per 2003 Plan (Page 17)	
12 – Water Management Services to Customers	A-3	Implemented per 2003 Plan (Page 17)	Continuing per 2012 Progress Report
13 – Identify Institutional Changes	A-5	Continuing implementation per 2003 Plan (Page 18)	
14 – Supplier Pump Improved Efficiency	A-6	Continuing implementation per 2003 Plan (Page 18)	
Other EWMPs:			
	1999 AWMC MOU A-4: Improve communication and cooperation among water suppliers, users, and other agencies	Continuing implementation per 2003 Plan (Page 18)	
	1999 AWMC MOU B-4: Facilitate voluntary water transfers	Continuing implementation per 2003 Plan (Page 19)	
Note: There is no equivalent AWMC Critical EWMP #2 or Conditional EWMP #10			

Conditional EWMP #10 – Facilitate or Promote Customer Pump Testing and Evaluation

In addition to EWMPs that were addressed by the 2003 Plan and its 2012 Progress Report, SBx7-7 includes Conditional EWMP #10. SSWD believes that EWMP #10 is fully implemented. SSWD sells water to customers who divert water through privately-owned lift pumps at a rate $1.00 per acre-foot less than to those using gravity diversions. SSWD believes this discount provides an incentive to the pump owner to evaluate and improve pump efficiencies as needed.

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ATTACHMENT 4

Additional Documentation